

temple, situated on the bank of the Somathangpo, the largest river in Tibet, without outlet to the ocean. Crossing a range 20,000 feet high, he reached Khala, shown on the maps as a great peak, but really a pass in a high range running from the main system. He then came to Ghalaringtso, which is described in the maps as containing a monastery on an island. Its real name is Ngnanglaringtso, and there are five islands. The shape given in the maps is reported to be wrong, as it runs east and west and is intersected by three rivers. The explorer again crossed the Great Range, and reached Mansorawar on July 26, and thence by known roads made his way to Simla.

Dr. Sven Hedin sums up the results of his explorations as follows:—

"First, the true sources of the Brahmaputra and Indus, and the genetic source of the Sutlej east of Mansorawar Lake.

"Secondly, the exploration of Bongba, which I traversed twice by different routes.

"But the greatest of all is the discovery of that continuous mountain chain which, taken as a whole, is the most massive range on the crust of the earth, its average height above sea level being greater than that of the Himalayas. Its peaks are 4000 feet to 5000 feet lower than Everest, but its passes average 3000 feet higher than the Himalayan passes. The eastern and western parts were known before, but the central and highest part is in Bongba, which was previously unexplored. Not a tree or a bush covers it; there are no deep-cut valleys, as in the Himalayas, for rain is scanty. The absolute heights remain to be calculated from observations made on the ten passes which I crossed."

It is stated that the new map of Tibet will be in 900 sheets, and that all the heights of the passes, the river crossings, and the encampments are recorded; a hundred astronomical points have been fixed, and several thousand panoramas have been taken, with compass bearings and names, while many photographs, pencil drawings and water colours have been brought back, together with meteorological observations and a collection of geological specimens, with the dip and fall of the rocks, from 1200 different points. The total length of Dr. Hedin's journeys is estimated at 4000 miles.

NOTES.

ACCORDING to Reuter's Agency, the negotiations which have been in progress for some time between Great Britain and Germany for the conclusion of the agreement to combat sleeping sickness in the African possessions of the two countries are now practically complete. It is thought that the new regulations will become operative on November 1. The convention, which is for a period of three years, provides that British and German doctors and the officials in charge of the concentration camps shall keep in touch with one another to compare the result of their various researches. Segregation camps will be established on either side of the international boundary, while infected natives will be prevented from passing into uninfected districts, such persons being detained and segregated. The convention also provides for the notification to the officials of both Governments of all infected areas, and for taking effective measures for dealing with crocodiles or other animals which may be found to be the food of the fly which carries the disease.

THE death is announced, at the age of eighty-nine years, of Prof. J. G. Hjalmar Kinberg, of Stockholm, well known as a medical practitioner and as a zoologist; also

(at the age of sixty-two years) of Prince Ivan R. Tarkanoff, until 1895 professor of physiology in the Military Academy of St. Petersburg, and since that date *privat-docent* on biology and physiology.

THE death is announced, at the age of sixty-one years, of Mr. George Nicholson, formerly curator of the Royal Gardens, Kew.

A COMMITTEE has been formed, under the chairmanship of ex-President Loubet, for the purpose of erecting a monument to the memory of the late Prof. Cornil at his birthplace, Cusset, near Vichy, France, and a public subscription list for the object in view has been opened.

SOME time ago a subcommittee of the Royal Society of Victoria was appointed to consider the question of establishing a memorial of the late Dr. A. W. Howitt. We learn from the *Victorian Naturalist* that it has now been decided to raise a fund of at least 100l. to found a "Howitt" medal, to be awarded from time to time to the author of distinguished work dealing specially with the natural science of Australia.

WE have to record with regret that a serious accident, attended with a fatal result, happened to the *aéroplane* of Mr. Orville Wright on September 17. The machine, after successfully making several evolutions, suddenly fell to the ground, in consequence, it is stated, of the breaking off of a blade of one of the propellers, and thus disturbing the balance. Mr. Wright sustained a fractured leg, and Lieut. Selfridge, who accompanied him as a passenger, has died from the effects of his injuries.

MR. WILBUR WRIGHT made a successful flight in his *aéroplane* at Le Mans on Monday last. The flight lasted 1h. 31m. 25s., in which time he covered 66 kilometres 600 metres, thus surpassing all previous performances both as to distance and time.

DR. SVEN HEDIN has accepted the invitation to lecture before the German Geographical Society at Berlin on the results of his recent explorations.

ACCORDING to the Stockholm correspondent of the *Globe*, the expedition under Prof. Baron Gerard de Geer, of the Stockholm University, which has been exploring the Spitzbergen group of islands, has just returned. The results (in geography, geology, biology, and hydrography) are reported to be most interesting. They will be submitted to the International Congress of Geology which is to be held at Stockholm in 1910.

ACCORDING to the *Times* of Monday last, the Royal Geographical Society has received information (dated from Khotan, July 15) from Dr. M. A. Stein respecting that explorer's latest archæological and geographical investigations in Central Asia. March and the early part of April were spent in archæological labours along the desert belt adjoining the oasis from Domoko to Khotan. Amongst the ruins newly traced there are the remains of a large Buddhist temple, decorated with elaborate frescoes, now completely buried by high dunes in the desert strip between the Yurung-kash and the Kara-kash rivers. On the curious desert hill of Mazar-tagh, which flanks the Khotan river on the west, some six marches below the Khotan oasis, Dr. Stein discovered the ruins of a fortified watch station once guarding the river route, and from great masses of refuse recovered numerous documents on wood and paper, in a variety of scripts, mainly Indian, Chinese, and Tibetan, and none apparently later than the eighth and ninth centuries A.D., many of which are stated closely to

correspond in appearance and character with the records brought to light by Dr. Stein last year from the ruined fort of Miran, south of Lop-nor. By the beginning of May the expedition reached Aksu, where Dr. Stein was able to arrange for the local help which Rai Lal Singh needed for the continuous survey he was to carry along the outer Tian-shan range westwards as far as the passes above Kashgar. Dr. Stein himself travelled up the Uch-Turfan valley, and thence marched by a route not shown by published maps across a barren but remarkably picturesque mountain range to the oasis of Kelpin. A rapid journey *via* Yarkand brought Dr. Stein by the middle of June back to Khotan, where he expected to remain until the end of July engaged in packing and arranging the archaeological collections gathered in his two years' wanderings. After completing his task at Khotan, Dr. Stein hoped to carry out, with Rai Lal Singh, explorations in those parts of the high Kwenlun range about the Yurungkash and Kara-kash sources which still remain to be surveyed, and late in September to be able to start on the return journey to India over the passes of the Karakorum, and to arrive in England in December.

THE nomination for the directorship of the new Australian Institute of Tropical Medicine has been delegated to the Royal Society and the Schools of Tropical Medicine of Liverpool and London, which institutions, according to the *Times*, have formally accepted the delegation. After nomination, however, the actual appointment of the director will be made by Prof. Martin, F.R.S., of the Lister Institute of Preventive Medicine, acting in conjunction with the Bishop of North Queensland, on behalf of the Australian universities having medical schools and of the Governments concerned. The institute, assisted by a grant of 400*l.* from the Colonial Office, is being subsidised by annual grants from the Commonwealth and the Queensland Governments. It will be established at Townsville, North Queensland.

MR. ROBERT NELSON has been appointed by the Home Secretary to the newly created post of his Majesty's Electrical Inspector of Mines; he has also been directed to act as an inspector for the purposes of the Metalliferous Mines Regulation Acts, 1872 and 1875, and of the Quarries Act, 1894. Mr. Nelson has further been appointed an inspector of factories and workshops for the purposes of the Factory and Workshop Act, 1901.

DR. LEWIS GOUGH, of the Transvaal Museum, has been appointed zoologist to the Government veterinary bacteriologist, Pretoria.

THE first general meeting of the recently formed Institute of Metals is to take place at Birmingham on November 11. The gathering will probably occupy two days. Mr. G. Shaw Scott has just been appointed secretary of the institute.

AN all Russian Oto-Laryngological Congress (the first of its kind) is to be held at the Pirogoff Museum on January 8-11 next, and in connection with it there will be an exhibition of instruments, apparatus, &c.

THE trustees of the Samuel D. Gross prize of the Philadelphia Academy of Surgery give notice that they are prepared to receive essays in competition for the prize until January 1, 1910. The prize, value 1500 dollars, is awarded every five years to the writer (such being an American citizen) of the best original essay, not exceeding 150 printed octavo pages, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations.

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MR. J. B. TYRRELL, of Toronto, offers a prize of 100 dollars for the best collection of minerals collected during the year 1908 in the province of Ontario by anyone not a professional collector. The collection must contain not less than thirty specimens, each bearing a label giving particulars as to the exact locality from which it was obtained and the date on which it was collected. Competing collections must be addressed "Tyrrell Prize, Government Assay Office, Belleville, Ont.," and reach the address in question by December 1 next.

AN appliance for working the keyboard of a typewriter on a type-setting machine from a distance by means of wireless telegraphy has been devised by Mr. Hans Knudsen, and a demonstration of the experimental apparatus was given at the Hotel Cecil on Thursday last.

THE skeleton of the mammoth which was found in January last in the sandy bed of the river Sangar-Yurach has now been conveyed under the auspices of the Imperial Academy of Science to St. Petersburg. The specimen is to be mounted in the zoological museum at St. Petersburg.

ALTHOUGH the capture of giant "devil-fish," or eagle-rays, in tropical waters is by no means an uncommon event, it is but seldom that accurate measurements and photographs of specimens of this nature are obtained. We have therefore reproduced the photograph of one of



Giant "Devil-fish" taken at High Island, Texas.

these fishes (for which we are indebted to the Rev. T. R. R. Stebbing) recently landed at High Island, off the coast of Texas, together with certain particulars regarding its size as recorded in the *Daily Picayune*, New Orleans, of August 2. The fish, as shown by the form of its "horns," is a species of *Ceratoptera*; it measured $12\frac{1}{2}$ feet in transverse diameter, and 9 feet from the mouth to the root of the tail. The interval between the eyes was 44 inches, and the diameter of the mouth 36 inches. No means of ascertaining the weight of the monster were available, although, at a low estimate, this was surmised to be at least 1300 lb. When first seen, the fish was thought to be a couple of porpoises swimming side by side; it was killed by repeated rifle-shots, by the first of which it was struck in the head near one of the eyes. According to local observers, the pair of processes which project like horns from the sides of the head are used to make a disturbance in the water and drive small fishes into the creature's capacious mouth.

To the July number of the *Emu* Mr. H. C. Oberholser contributes a useful synopsis of the known species of

swans, recent and fossil. Living swans the author divides into the genera *Cygnus*, *Olor*, and *Chenopsis*, the South American *Coscoroba* being regarded (we think wrongly) as a duck. In our opinion such generic divisions seem superfluous, but if they are adopted surely the emendation *Chenopsis* for the absurd and meaningless *Chenopsis* might be accepted. The large Pleistocene swan of Malta is referred to yet another genus, under the name of *Palaeocygnus falconeri*, on account of its relatively short thigh-bone, long metatarsus, and short, thick toe-bones. A fossil black swan (*Chenopsis summerensis*) has been named on the evidence of bones from a cave at Sumner, near Christchurch, New Zealand, and a second (*Ch. nanus*), of very small size, from Pleistocene or Pliocene deposits at Lake Eyre, South Australia. From the same locality have been obtained remains of a larger swan which Mr. de Vis has made the type of yet another genus, under the name of *Archaeocygnus lacustris*, despite the apparent slightness of the osteological differences by which it is distinguished from the existing black swan.

In sending a copy of part iii. of the first volume of the *Annals of the Natal Government Museum*, Dr. Warren refers to the large number of plates necessary for the proper illustration of the specimens described, which comprise a large number of new species. As these plates, of which there are no less than fourteen (with five of double size) in the present issue, are executed, for the most part in London, in the best possible style, the expenses of publication are necessarily very great. An increase in the number of subscribers is therefore asked for, in order that this invaluable journal may be carried on in the same style as hitherto. The contents of the present part comprise an article by the editor on a collection of hydroid zoophytes, for the most part from the Natal coast, in which several new species are described, while others receive fuller illustration and description than have previously been accorded them. Mr. G. A. Boulenger describes several new fresh-water fishes and reptiles (including one of *Zonurus* and another of *Gerrhosaurus*), while in a third paper Mr. C. T. Regan contributes to our knowledge of the marine fish-fauna of this part of Africa.

THE greater portion of the third part of vol. xxxviii. of *Gegenbaurs Morphologisches Jahrbuch* is devoted to an article on the human sacrum, by Dr. C. Radlauer, of the Anthropological Institute of Zurich University. After the examination of a very large series of specimens, the author finds that, in addition to a remarkably large range of individual variation, this portion of the skeleton also shows modifications dependent upon sex and race, special attention being devoted to variations of the latter type. As regards individualism, it is pointed out that whereas five vertebrae normally unite to form the sacrum, the number may be occasionally reduced to four or augmented to six, the addition being less uncommon than the subtraction of an element. As regards sexual variation, the sacrum is relatively broader in the female than in the male. The breadth in both sexes (each for each) is, however, greater in European than in non-European races; there is also a distinction in the form of the under surface in European sacra compared with those of other races. Bushmen, Malays, and Chinese possess a sacrum of the "dolichohierische" type; in most negroes, Ainu, and Japanese the type is "subplatyhierische," while in some Japanese, Australians, and Europeans it becomes "platyhierische." In view of recent changes of view in regard to the relationship of the natives of Australia, their association from the present standpoint with Europeans is extremely significant.

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GRAPHIC methods of recording and utilising bird-migration data form the subject of an article by Mr. W. Stone in the April issue of the *Proceedings of the Philadelphia Academy of Sciences*. The date of the first arrival of one particular species in a given locality is not a fact of much importance or value, and the author suggests, in lieu of the recording of such isolated cases, maps for certain districts embracing a ten-mile radius should be prepared on which all early arrivals can be plotted. Charts showing temperature-variation in connection with bird-migration are also suggested and exemplified by samples.

IN *Annotationes Zoologicae Japonenses*, vol. vi., part iv., Mr. I. Ikeda records the interesting fact that at certain seasons the relative of *Balanoglossus* known as *Glandiceps hacksii* consorts in swarms and assumes a pelagic habit. In the same issue Dr. A. Oka describes a new genus and species (*Stephanella hina*) of fresh-water bryozoans from Japan. In many respects the new genus differs from any hitherto known, this being specially noticeable as regards the peculiar conformation of the colony, which differs from that of all other phylactolamatus fresh-water bryozoans in that it consists of a thick, creeping stolon and of a single upright polyp-stem, such as is found in certain marine members of the ctenostomatous group.

A SECOND botanical part of the *Philippine Journal of Science*, issued in June, contains a paper by Signor M. Ugolino on the native species of *Pandanus*, describing varieties of *Pandanus tectorius* and several new species. Among the determinations of Philippine fungi communicated by Dr. P. Hennings are new species of *Uredo*, *Aecidium*, *Phyllachora*, *Rosellinia*, and *Diplodia*. One species of *Rosellinia* and *Pestalozzia palmarum*, genera known as insidious pests in the tropics, were taken on cocoa-nut trees, and a *Diplodia* was obtained from the scales of a *Pandanus* fruit. Mr. E. D. Merrill contributes an article on the plants collected by the Wilkes United States Expedition in 1842, and a further instalment of botanical literature connected with the islands.

MR. A. M. F. CACCIA has compiled a glossary of technical terms for use in Indian forestry that has been published as *Forest Pamphlet No. 3* by the Government of India. The forester's vocabulary consists of many technical expressions such as form factors, silvicultural systems, classes of rotation, as well as terms that have a special application, to wit, fireline and forest devil. The Indian forester cannot be accused of coining terms, as "taungya" or "jhum" and "indaing" appear to be the only contributions, the former referring to sowing the seed of special trees with field crops, the latter to forests where "in" trees, species of *Dipterocarpus*, abound. A special list of American terms furnishes a tribute to the push of American foresters. Tree scribe, volunteer growth, and veteran require explanation, but to harden off and sapling sound distinctly British.

AN account of the plant formations in mid and southern Greece, contributed by Dr. E. Pritzl to Engler's *Botanische Jahrbücher* (vol. xli., part iii.), derives special interest from the classic associations connected with the regions described. Olive trees still clothe thickly the Attic plain, and the vine foliage colours the valley of the Cephissos that flows towards the Piræus. In other parts the evergreen formations termed "maquis" are found. The characteristic trees in the maquis are the Aleppo pine, species of *Arbutus*, and *Quercus coccifera*. A subformation, the "phrygana," consists of bushes and other xerophytes. Here grows the Greek thyme, *Thymus capitatus*,

famous as the food of the bees of *Hymettus*; associated with it are *Poterium spinosum*, *Genista acanthoclada*, and *Phlomis fruticosa*.

IN the September issue of *Man* Prof. J. G. Frazer discusses three remarkable statues of kings of Dahome now deposited in the Trocadero Museum. The figures are symbolical, each king being represented in the guise of an animal. Thus, Guezo, who reigned from 1818-58, and was known as "the cock," is represented by a man covered with feathers; Guelele (1858-89), "the lion," as a lion rampant; Behanzin, his successor, who was finally deposed by the French, known as "the shark," appears as a dog-fish graced with the arms and supported by human legs. The "feathers" which once covered the statue of Guezo are nothing but metal plates, nails, gimlets, and scraps of old iron. Prof. Frazer observes that the existence of these statues seems to prove that certain kings of Dahome habitually posed as certain fierce animals or as birds. They possibly intended by this means to serve some magical purpose. At any rate, they cannot be totems hereditary in the male line, since they differed in three successive generations traced from father to son.

MR. A. L. KROEBER, in the second Bulletin of the eighth volume of the reports on American archæology and ethnology issued by the University of California, publishes an elaborate memoir on the Cahuilla Indian tribe which occupies the southern part of the province. The primitive culture of this people has in a great measure disappeared, but Mr. Kroeber has been able to collect a number of interesting exhibits which throw light upon their social and religious culture. This is not of a uniform type, being largely conditioned by the varied environment to which they are exposed. Basketry in the form of domestic appliances, mortars, caps, granaries, water jugs, and the like, is, as is usual among the neighbouring tribes, ingenious and artistic. The few examples of pottery discovered, though of an inferior class, are interesting as specimens of an art which has now practically disappeared; in fact, so little has been found that it was at one time supposed that the art of manufacture was unknown to these Indian tribes. Bows and arrows, flutes, and digging-sticks are some of their manufactures in wood. Most of the ceremonial objects connected with their pagan rites have disappeared since their adoption of Christianity, and the same is the case with their ceremonies, the most important of which were an annual tribal mourning for the dead, a puberty rite for girls, and an initiation ritual for youths, at which the jimson-weed was infused and drunk as a mode of producing religious ecstasy. The numerous illustrations appended to the report clearly illustrate the culture of this rapidly disappearing people.

THE Mitchelstown caves, described by Dr. C. A. Hill in a paper before the Geographical Section of the recent British Association meeting, have since been completely explored and surveyed. These caves are of great interest, not only from the fact that they are the largest in the British Isles, but also on account of their historical associations. The earliest plan is that of Dr. Apjohn, in 1833, and a later one was published by M. Martel in 1893. Many new passages have now been discovered, and it is hoped that the new plan, together with a description, will be published shortly. The work of survey and exploration was carried out by Mr. H. Brodrick, Drs. C. A. Hill and A. Rule, of Liverpool, and Mr. R. Lloyd Praeger, of Dublin.

THE current issue of the Transactions of the Geological Society of South Africa, covering the period from January to June, affords evidence of the admirable work that is being done in the scientific investigation of South African mineral deposits. Mr. H. Merensky describes the rocks belonging to the area of the Bushveld granite complex, in which tin may be expected. The descriptions of the deposits actually found show that the local conditions correspond in all essential points with those in other parts of the world. Mr. E. P. Mennell describes the occurrence of diamonds at Somabula and Bembezi, in Rhodesia. Mr. R. B. Young records the occurrence of yellow and red ochre in the Potchefstroom district, Transvaal. The occurrence is of interest commercially, and also on account of the clear indications that it is the result of the extreme decomposition of an igneous rock. Mr. A. L. Hall and Mr. W. A. Humphrey describe the occurrence of chromite deposits along the southern and eastern margins of the Bushveld plutonic complex. The ore occurs in veins in norites, hypersthénites, enstatite rocks, and olivine-bearing serpentines. The occurrence of platinum in some of the chromite deposits is of great interest in view of the close general resemblance to the conditions under which platinum is found *in situ* in the Ural, and suggests the possibility of finding alluvial platinum in South Africa. This number of the Transactions also contains important papers on contact metamorphism in the Pretoria series of the Lydenburg and Zoutpansberg district by Mr. A. L. Hall, on contemporaneous igneous rocks in the Pretoria series by Mr. A. L. Hall, and on the stratigraphy of Zwartkop by Mr. G. S. Corstorphine and Mr. E. Jorissen.

FROM the Department of the Interior, Manila, we have received an attractive pamphlet of thirty-nine quarto pages, with six plates and two maps, issued by Mr. Warren D. Smith, chief of the division of geology and mines. It deals with the mineral resources of the Philippine Islands, and contains the first annual statement of mineral production. The production in 1907 consisted of 4540 ounces of gold, 83 ounces of silver, 436 tons of iron, and 4545 tons of coal. Although the figures are insignificant, the record is a valuable one as indicating the progress that has been made in placing the mining industry on a satisfactory basis. Many difficulties are encountered. Natural features of the country are sometimes insurmountable, and the labour question is a serious one. The history of the district of Benguet shows, however, that a sure and profitable mining industry can be built up in the islands. Appended to the report are memoirs on the geology of north-western Mindanao, on mining prospects on the Zamboanga peninsula, on the characteristics of Philippine ores, and on the characteristics of Philippine coals. Most of the coals are useful for steaming purposes, and for the production of power the utilisation of the outcrop coal for producer-gas seems extremely promising.

IN view of the centenary of James Nasmyth's birth, the date of which was August 19, 1808, a review of his engineering work is published in the *Engineer* of September 18. Nasmyth invented the steam hammer in 1839, and applied the steam hammer to pile-driving in 1845. The details given of numerous other new ideas he presented to the world clearly show to what a large extent engineers are indebted to him.

THE new edition of the French pharmacopœia (the "Codex Medicamentarius"), which has been recently issued, differs materially from the edition immediately preceding it, which appeared in 1884. The alterations are

chiefly concerned with the simplification of preparations, such as the tinctures of iron and opium, in the manner recommended by the recent International Convention which considered the maximum doses of potent drugs. Many preparations which have fallen into disuse, and which had become stereotyped in former editions, have been omitted from the one just published, while a certain number of new drugs are included, such as adrenalin, theobromine, tuberculin, and other agents employed in opsonic, vaccine, and serum therapy.

THE Journal of the Royal Sanitary Institute for September (xxix., No. 8) contains papers read at the congress at Bristol. Dr. Savage deals with the hygienic preparation of sausages, showing that, as ordinarily prepared, they always contain *Bacillus coli* in numbers varying from 10 to 120,000 per gram. The presence of this organism in such large numbers is evidence of an undesirable want of cleanliness in some part of the process of manufacture.

THE *Rendiconti* of the Reale Accademia dei Lincei, part ii., 1908, contain an account, by Dr. C. Alessandri, of observations of solar radiation at the Regina Margherita Observatory on Monte Rosa (lat. $45^{\circ} 56'$) in the months of August and September, 1905 and 1906. This study of solar radiation at an altitude of 4560 metres is an important contribution towards the solution of the intricate question of the possible influence of the sun's varying intensity on the weather at the earth's surface. The observations were made with Ångström's pyrheliometer, to which are added the readings of Arago's actinometer, air pressure, temperature, and other data. At the time of the solar eclipse of August 30, 1905, which occurred at Monte Rosa between 1h. 5m. and 2h. 55m. p.m., with a perfectly clear sky, the values obtained vary from 1.651 gram calories at 12h. 41m. to 0.298 at 2h. 20m. and 1.530 at 3h. 39m. p.m. The observations made in 1907 will be communicated to the academy in a subsequent note.

OUR ASTRONOMICAL COLUMN.

COMET MOREHOUSE, 1908c.—Although, according to its ephemeris, Morehouse's comet is increasing in brightness, it still remains a disappointing object except to those possessing large instruments; this is probably due partly to its diffuse nebulous nature and partly to the strong moonlight that has obtained during the time which has elapsed since its discovery on September 1.

Numerous observations of this object are recorded in No. 4273 of the *Astronomische Nachrichten* (p. 14, September 14), having been communicated, telegraphically, to the Kiel Centralstelle. The comet's magnitude was recorded as 9.0 at Copenhagen and at Uccle on September 4, as 10.0 by Prof. Palisa at Vienna on September 5, and as 9.3 and 9.0 at Strassburg on September 5 and 7 respectively. In the latter observation, Prof. Wirtz records the appearance of a small, fine tail in position-angle 230° . An indefinite condensation, $2'$ in diameter and about as bright as a ninth-magnitude star, was observed by Prof. Abetti, at Arcetri, on September 4; the condensation appearing more especially in the north-east section of the nebulous patch. An observation by M. Sternberg at Moscow on September 6 revealed no nucleus.

A telegram from Paris, received at Kiel at midday on September 4, announced that the comet was discovered independently by M. Borrelly at 10h. om. (Marseilles M.T.) on September 3; its magnitude was given as 10.0, its movement as north-east, and it was said to possess a feeble condensation and a small tail. Prof. Morehouse described the tail as "long and conspicuous," and the apparent discrepancy is, possibly, due to the fact that he

discovered the comet photographically. Observed visually, the tail is not conspicuous, but photographs taken with the 36-inch reflector of the Solar Physics Observatory show that there is a fairly prominent tail with at least two main streamers.

Owing to the diffuseness and faintness of the comet, no observations of its spectrum have, as yet, been possible.

According to the ephemeris given in these columns last week, the comet should be some $4\frac{1}{2}$ m. W. and $2^{\circ} 17'$ N. of the 3.3 magnitude star β Cephei at 10 p.m. (G.M.T.) on September 30, and its brightness should then be about $3\frac{1}{2}$ times that at the time of discovery.

THE ORBITS OF SEVERAL SPECTROSCOPIC BINARIES.—Lick Observatory Bulletin No. 133 contains several notes referring to different stars which the observations have shown to be spectroscopic binaries.

First, Mr. Plummer discusses the orbit of α Leonis, the spectrum of which has been differently classified by different observers, and some difficulty found in bringing the velocity measures into accordance. It is now found that the spectra of both components appear when the latter are separated by the greatest distance.

The masses of the two components are almost equal, and the period is found to be 14.4980 days, the orbit being very nearly circular.

The period of β Herculis is found to be 410.575 days; the eccentricity of its orbit is 0.5498, and the length of the semi-major axis 60,280,000 km.

The perturbation discovered in the orbital motion of the visual binary ξ Ursæ Majoris by Mr. N. E. Nörlund is found by Mr. W. H. Wright to be due to the fact that the principal component itself is a spectroscopic binary, the measures already made indicating that Mr. Nörlund's period of 1.8 years is not far wrong.

In the last note Mr. A. B. Turner compares the elements of the orbit of ω Draconis as derived by the analytical method with those obtained by the method of Lehman-Filhés, and the final elements from a least-square solution. The period is found to be 5.2796 days, the eccentricity 0.016, and the semi-major axis 2,626,700 km.

THE DETERMINATION OF TIME IN SUBTROPICAL LATITUDES.—A paper by Messrs. Wade and Craig, appearing in No. 21, vol. ii., of the *Cairo Scientific Journal*, describes a method which was devised by the authors, and has been found very useful, for determining local time, with great precision, in subtropical latitudes. The method differs from those proposed by Chandler and Cooke, inasmuch as the observations are not restricted to a circle passing through the pole, and is therefore more suitable for equatorial latitudes. The method of observation consists in taking transits of a pair of stars, one east and one west, at the altitude of their maximum elongation when the star is rising vertically, stars being chosen so that the maximum elongation takes place as near as possible to the prime vertical. It is shown by the authors that the computation of results becomes a simpler matter, and that many corrections which have to be applied in other methods are either eliminated or negligible.

CAMBRIDGE UNIVERSITY OBSERVATORY.—From the annual report of the observatory syndicate we learn that the work of Cambridge University Observatory during the period 1907 May 19 to 1908 May 18 was directed along the usual lines. Stellar parallax work was continued with the Sheepshanks equatorial, and was somewhat retarded by poor weather at the beginning of this year. Valuable catalogues of star-places are evolving from the Eros solar-parallax reductions, and it is hoped that the first solution of the whole material will be made during the present year.

Stellar spectroscopy, solar observations, and the laboratory study of spectra formed the programme for the Newall telescope, and an attempt is being made to develop a method for utilising the sharply defined atmospheric lines of the α and β groups as standard lines in the determination of radial velocities of stars. At present the method is not successful with faint stars owing to the lack of sensitiveness of the photographic plates and to the want of brilliancy of the diffraction gratings available for use in the spectroscope employed.